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Model-based study of synergy between pneumonia, influenza and other respiratory diseases in UkraineI. Dzyublyk¹, Y. Dzyublyk², S. Soloviov^{1,*}, S. Lobach³¹ PL Shupyk National medical academy of postgraduate education, Kiev, Ukraine² FG Yanovsky National Institute of Phthysiology and Pulmonology, Kiev, Ukraine³ Taras Shevchenko National University of Kyiv, Kiev, Ukraine

Background: Historically, research of infectious diseases has focused on infections with single pathogens. However, infections with pathogens often occur in the context of other pre-existing viral and bacterial infections or pathological conditions. Clinically, this is of particular relevance for co-infections with pathogen *Streptococcus pneumoniae* and influenza virus, which both are the important cause of global morbidity and mortality in the world. However, the analysis of incidence data, representing the possible synergy between community-acquired pneumonia (CAP), which possible causative agent is *S. pneumoniae*, influenza and other respiratory diseases (RD) (chronic bronchitis, asthma, etc.) has never been presented before in Ukraine. The aim of the research was the model-based study of the official incidence data to identify the possible relationship between CAP, RD and influenza morbidity rates during 2007–2011 epidemic seasons in Ukraine via mathematical modeling.

Methods & Materials: The official incidence data, published annually by Influenza Control Center and FG Yanovsky National Institute of Phthysiology and Pulmonology, was analyzed. As a result it was proposed conceptual synergy model of CAP, influenza RD morbidity among the population of Ukraine (Fig. 1). The model parameters were found by the program developed in Java and based on the quasi-gradient method.

Results: The highest CAP morbidity rate in Ukraine was in 2009–2010 yrs., exceeding corresponding value for 2008 by 24.2% and for 2011–by 5%. The analysis of incidence data showed significantly higher morbidity rates than average in Vinnytsia, Ivano-Frankivsk and Kyiv regions. The mathematical model implied the existence of a functional relationship between the incidence of influenza and RD in their influence on the occurrence of complications such as CAP. Results of modelling showed that probably about 20% of CAP among the population of Ukraine occur as a complication after influenza (individually or against the background of bronchitis, asthma and other pathological conditions related to RD).

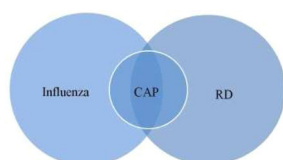


Fig. 1. Conceptual model of possible synergy between CAP, influenza and RD.

Conclusion: It was proposed the meaningful approach to modeling that takes into account the functional relationship between RD and influenza cases that led to CAP and show strong association between these diseases and necessity of more intensive use of intensive preventive strategies for its control.

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Perception of high school students on risk for HIV and use of VCT service for HIV in EthiopiaS.S. Marrye^{1,*}, S.S. Marrye¹, G. Medhin², W. Erku², D. Wolodeyohannes²¹ JHU-TSEHAI/FMoH, Addis Ababa, Ethiopia² Aklilu Lemma Institute of Pathobiology, Addis Ababa University, Addis Ababa, Ethiopia

Background: Human immunodeficiency virus (HIV) epidemic among youth is largely ignored and remains invisible to both young people themselves and to the society as a whole. Thus, the aim of the study was to assess the extent of HIV risk perception and utilization of voluntary counseling and testing (VCT) service among high school students at Debre-berhan Town, Amhara Regional State, Ethiopia.

Methods & Materials: A descriptive cross-sectional study was carried out from November 2010 up to January 2011 among secondary school students at Debre-berhan Town. A stratified random sampling technique was used to recruit study participants by taking schools as strata. Semi-structured self-administered questionnaire was used to collect the necessary data. Data was entered and analyzed using SPSS version 17.0. P-value < 0.05 was considered as statistically significant.

Results: A total of 339 students were consented to participate in the study and the response rate was 96.3%. Among the study participants, 30 (8.8%) had sexual contact and the mean age of first sexual encounter was 16.4 (SD = 2.05) years. Of sexually active students, 12 (3.5%) had sex with different persons within the last 6 months, 13 (3.8%) had ever used condom and 15 (4.4%) had used VCT service. There was no statistically significant association between risk perception towards HIV infection and ever use of VCT service (AOR (95% CI) = 1.0 (0.30, 4.02)).

Conclusion: Students were engaged in risky sexual behavior even though they had heard about HIV/AIDS. The perception of risk for acquisition of HIV infection and utilization of VCT were low. Thus, education on topic of HIV/AIDS through integrating as part of school curriculum and encouraging the existing health institutions to provide youth-friendly sexual counseling services including VCT for HIV are strongly recommended.

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